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Influence of social networks on the mental health of university students in Huancayo, Peru

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ABSTRACT

Since the appearance of signed social networks (SSNs), their use has increased steadily among young people, not only in terms of the number of users but also in terms of the time they devote to managing the platforms, a situation that may be influencing their behavior. This study aimed to analyze the influence of the use of social networks (SNs) on the mental health of young university students. For this purpose, a quantitative, basic, and correlational study was carried out. We worked with a sample of 361 undergraduate students in health careers at a university in Huancayo. The PERMA-Profiler scale for mental health and the brief social network addiction questionnaire were used as data collection instruments to evaluate the use of SNs. The results indicate that there is a statistically significant influence of the use of SNs on the mental health of students, which explains a variability of 53.5% to 79.9%, according to the values of the Nagelkerke Pseudo X2 calculation for SNs. This suggests that the use of SNs hurts students' mental health.

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1. INTRODUCTION

Nowadays, social networks (SNs) have become an important part of the lives of young people and adults, who use them daily to get information, communicate, and form part of a virtual community. This use, which can be described as massive, raises concerns about the impact of these technologies on the mental health of the population, especially the youngest [1], [2]. Based on this problem, several studies have evaluated how the use of social media affects mental health, including the impact on body image, quality of sleep, life satisfaction, depression, use of toxic substances, impulsivity, and deterioration in social skills [3], [4], especially in cases of excessive use of social networks, such as Facebook, Twitter, Instagram, and TikTok [5]. However, other studies have observed that moderate and responsible use of signed social networks (SSNs) could provide opportunities to address the mental health problems that emerged as a consequence of the COVID-19 pandemic [6].

It is important to consider that mental health problems can affect students at any point in their professional training. However, the early stages of the university period can be critical for the prevention, detection, and early treatment of problems that not only affect interpersonal relationships but also jeopardize comprehensive well-being [7]. Addressing the problem of mental health and the use of social media has a significant effect on academic performance, as it can lead to early detection of the risk of professional abandonment [5], [6]. Likewise, there is a potential impact on the perception that each student has of themselves, as well as the limitations in their social relationships [8].

In Peru, the context of the COVID-19 pandemic during 2020 required a large part of the population to adopt information and communication technologies (ICT) in their daily activities. However, several studies have been published that have criticized the scope and adequacy of these measures [7], [9]. In this context, the change of platform, especially in the educational sector, was an imposition of the context for which neither workers nor students were prepared [10]–[12]. Thus, the forced change generated the need for many students to spend more time in front of the screens, which added to the mandatory social distancing (quarantines), and increased the use of social media that was not necessarily linked to academic activities, regulations, or responsible use of the device [13].

On the other hand, due to the consequences of the pandemic, virtual classes in Peru continued to be held in universities until the second semester of 2022. It should be noted that during the previous two years, virtuality was limited to the intensive use of SNs in education and work, as well as in everyday life, which cemented a habit that continued despite the return to face-to-face classes. This situation could be linked to potentially negative effects on the mental health of students [2], [14] and their poor academic performance, so a latent concern has been detected to learn more about the association between the variable "SNs" and the mental health of students. Based on this, the following research question arises: How does the use of SNs influence the mental health of university students? In this regard, the present study aimed to analyze the influence of the use of SNs on mental health in students of a private university in the central region, of Huancayo, Peru, during the period 2023.

2. METHOD

The study is framed within a quantitative approach, of the basic type, with a non-experimental design, at a causal correlational level. The main hypothesis considered was that the use of social media has negative effects on the mental health of students, and the specific hypothesis considered was the negative effect of social media on the dimensions of mental health. To obtain the sample, the total population of students-of both gender and over 18 years of age-enrolled during the year 2023 in the Faculty of Health Sciences was considered, which according to academic records consisted of 5,936 students. For the sampling process, a statistical calculation of a probabilistic nature was performed using the formula for simple random sampling, as established by Serdar *et al.* [15]. After the calculation, a proportional sample of 361 university students from the city of Huancayo, belonging to different health programs, was obtained as shown in Table 1. Only students who were enrolled in the academic year 2023, over 18 years of age, and who had previously agreed to participate through informed consent were considered.

The PERMA-Profiler scale for the mental health variable, developed by Butler and Kern [16] and validated by Ryan *et al.* [17], was used to obtain the data. The psychometric validity properties, according to factor analysis, are RMSEA=.054, SRMR0=.030, CFI=.940, and TLI=.950. with a Cronbach's alpha coefficient of $.360 \leq \alpha \leq .874$ and an Omega of $.379 \leq \omega \leq .854$. Likewise, for the variable SNs, the brief questionnaire on addiction to SNs developed by Salas-Blas *et al.* [18] was used, which presented a validity by factor analysis of CFI=.989; TLI=.982; RMSEA=.041 and SRMR=.023, and an Omega of .916.

The application of the instruments was carried out through the university's psycho-pedagogical department. To collect the data for this research, permission was requested from the Dean's Office of the Faculty of Health Sciences, so that the research was approved by the Research Ethics Committee of the Universidad Peruana Los Andes, according to Resolution No. 0919-2023-R-UPLA. The evaluation was carried out in person in the classrooms of the faculty. The application began with the signing of the informed consent, followed by the self-administered questionnaires. Subsequently, the data were digitized, recorded, and analyzed using the SPSS v25 statistical program.

Table 1. Study participants by academic program and gender

Program	Female		Male		Total	
	n	%	n	%	n	%
Psychology	63	17.50	34	9.40	97	26.90
Nursing	47	13.00	12	3.30	59	16.30
Medical Tec.	23	6.40	28	7.70	51	14.10
Odontology	27	7.50	14	3.90	41	11.40
Veterinary	21	5.80	17	4.70	38	10.50
Pharmacy and Biochemistry	22	6	10	2.80	32	8.90
Obstetrics	26	7.20	0	.00	26	7.20
Nutrition	13	3.60	4	1.10	17	4.70
Total	242	67.00	119	33.00	361	100.00

3. RESULTS AND DISCUSSION

3.1. Results

The objective of the present study is to determine the influence of SNs on positive mental health, positive emotions, commitment, positive relationships, purpose, and achievement in university students in Huancayo. It began with an exploration of the variables and their dimensions. Subsequently, the calculation of normality was performed according to the Kolmogorov-Smirnov test, to finally perform the likelihood ratio tests, pseudo R2, and Wald coefficients for each combination.

Concerning the levels found in each variable and its dimensions, for SNs, it was found that 36.8% presented very high levels, while the same level per dimension was: salience (68.1%); mood change (93.6%); tolerance (75.1%); withdrawal syndrome (83.9%); conflict (57.9%); and relapse (76.7%) as presented in Table 2, which implies that a large percentage of the surveyed students use SNs. Table 3 shows that the alternative with the highest frequency in the mental health variable is high level, with 49.9%; a similar situation occurs with the other dimensions, except for relapse, which reaches the very high level (38.8%), which would indicate that, the evaluated sample enjoys, for the most part, an appropriate mental health.

Table 2. Frequencies and percentages of SNs and their dimensions

Levels		n	%
SNs	Very high	133	36.8
	High	122	33.8
	Moderate	79	21.9
	Low	27	7.5
D1: salience	Very high	246	68.1
	High	67	18.6
	Moderate	40	11.1
	Low	8	2.2
D2: mood changes	Very high	338	93.6
	High	21	5.8
	Moderate	1	.3
	Low	1	.3
D3: tolerance	Very high	271	75.1
	High	41	11.4
	Moderate	45	12.5
	Low	4	1.1
D4: Withdrawal syndrome	Very high	303	83.9
	High	30	8.3
	Moderate	17	4.7
	Low	11	3
D5: conflict	Very high	209	57.9
	High	65	18
	Moderate	70	19.4
	Low	17	4.7
D6: relapse	Very high	277	76.7
	High	54	15
	Moderate	24	6.6
	Low	6	1.7

Table 3. Frequencies and percentages of mental health and its dimensions

Levels		n	%	Levels		n	%
Mental health	Low	14	3.9	Mental health	High	180	49.9
	Moderate	66	18.3		Very high	101	28.0
D1: relapse	Low	14	3.9	D5: achievement	Low	22	6.1
	Moderate	78	21.6		Moderate	94	26.0
	High	129	35.7		High	160	44.3
	Very high	140	38.8		Very high	85	23.5
D2: commitment	Low	14	3.9	D6: self-perceived	Low	19	5.3
	Moderate	66	18.3	physical health	Moderate	85	23.5
	High	193	53.5		High	156	43.2
	Very high	88	24.4		Very high	101	28.0
D3: relationships	Low	28	7.8	D7: negative	Low	48	13.3
	Moderate	65	18	emotions	Moderate	131	36.3
	High	171	47.4		High	147	40.7
	Very high	97	26.9		Very high	35	9.7
D4: purpose	Low	19	5.3	D8: general	Low	20	5.5
	Moderate	50	13.9	wellness	Moderate	89	24.7
	High	153	42.4		High	199	55.1
	Very high	139	38.5		Very high	53	14.7

When the Kolmogorov-Smirnov normality test was applied, it was observed that the assumption of normality was met for both the SNs and mental health variables, as well as for their dimensions (p>.05) as shown in Table 4, which would allow the use of parametric tests. Next, to evaluate the influence of SNs on mental health, ordinal logistic regressions were calculated for both the direct effect on the variable and the dimensions as presented in Table 5. The results indicate that the variable SSNs significantly influences both mental health and its dimensions (p<.05).

Table 6 shows the values of Nagelkerke's Pseudo X2 calculation for SNs in mental health and dimensions. The results show that the use of SNs explains a variability of 53.5% for mental health, 57.8% for positive emotions, 71.9% for commitment, 79.9% for consolidation, 58.9% for purposefulness, and 68.9% for achievement. Finally, in Table 7, the Wald scores are greater than 4 in all cases (p<.05); these are in the range of 14.337 to 20.701 and 1 degree of freedom, implying that SNs significantly impacts mental health, positive emotions, commitment, consolidation, purpose, and achievement.

Table 4. Normality test by variables and dimensions

Variables/dimensions	K-S	gl	p
Social networking	.085	361	.061
Salience	.160	361	.059
Change of mood	.180	361	.071
Tolerance	.148	361	.112
Withdrawal syndrome	.174	361	.145
Conflict	.101	361	.128
Relapse	.150	361	.087
Mental health	.077	361	.496
Positive emotions	.092	361	.078
Commitment	.090	361	.321
Relationships	.084	361	.214
Purpose	.097	361	.590
Achievement	.072	361	.131
Self-physical health	.075	361	.064
Negative emotions	.065	361	.071
General well-being	.095	361	.610

Table 5. Likelihood ratio tests for SNs in mental health and its dimensions

		Log -2	R2	gl	*p*
SNs in mental health	Intersection	616.523			
	Final	44.856	385.856	3	.000
SNs in positive emotions	Intersection	456.357			
	Final	224.706	552.651	3	.000
SNs in commitment	Intersection	481.659			
	Final	0	481.659	4	.000
SNs in consolidation	Intersection	530.320			
	Final	74.212	456.108	4	.000
SNs in purposefulness	Intersection	520.320			
	Final	64.212	356.108	4	.000
SNs in achievement	Intersection	310.320			
	Final	24.212	256.108	4	.000

Table 6. Pseudo R2 for SNs in mental health and its dimensions

SNs and its dimensions	Pseudo X2	%
SNs in mental health	.535	53.5
SNs in positive emotions	.578	57.6
SNs in commitment	.719	71.9
SNs in consolidation	.799	79.9
SNs in purposefulness	.589	58.9
SNs in achievement	.689	68.9

Table 7. Estimation of parameters obtained for SNs in mental health and dimensions

	Wald	gl	*p*	95% CI	
				LL	UL
SNs in mental health	17.965	1	.000	-5.300	-3.548
SNs in positive emotions	14.337	1	.000	-5.374	-3.383
SNs in commitment	19.857	1	.000	-2.780	-1.081
SNs in consolidation	20.701	1	.000	-2.429	-.967
SNs in purposefulness	18.741	1	.000	-2.429	-.967
SNs in achievement	14.241	1	.000	-2.429	-.967

3.2. Discussion

These results are empirical evidence arising from applying the PERMA-Profiler scale for the mental health variable to the sample in question [16], [17]. The Wald scores and inferential statistical analysis evidence that the use of SNs negatively affects the mental health of the students assessed in this study. First, Chen *et al.* findings [13] align with the present study's elements. This was observed by conceptualizing the well-being of international students in the U.S. at the onset of the COVID-19 pandemic as a multidimensional construct that includes internalizing symptoms such as depression, anxiety, and loneliness, as well as typifying them as markers of cross-cultural difficulties. They also add nuance to the social compensation hypothesis by delineating person-specific associations between psychosocial well-being and social network use.

This is probably related to the distraction generated by remaining connected for a prolonged period through a cell phone or computerized equipment. Similarly, the frequent comparison with the lifestyle of their peers and the appearances shown in the feeds can bring about unhealthy or unfavorable confrontations [19]. Similarly, doubts and insecurities in the student about the perception that other members of a group, have about them may propitiate a state of anxiety for fear of being ignored or rejected in a social group or a specific community [20].

In this regard, Ostic *et al*. [21] provided empirical evidence and solid statistical analysis, from which they demonstrated that positive effects (positive effect of binding social capital and bridging with social integration) and negative effects (phubbing behavior or ignoring people around) coexist, which helps to reconcile the inconsistencies found in the available literature. These situations can drive students to seek forms of adaptation that, in many cases, they carry out without measuring consequences, adopting stereotyped postures or models associated with the social status in which they expect to be accepted. These actions can range from fashions, tastes, or routines to eating behavior problems and phubbing behavior [4], [19]–[22].

In addition to the risks generated due to content on social media, there is also the danger of exposure to practices such as sexting, cyberbullying, misinformation and content that promotes maladaptive behaviors, such as isolation, self-injury, suicidal behavior, anorexia, bulimia or bigorexia, which are also associated with mood disorders, anxiety, and depression [20], [23]. In terms of performance, Draženović *et al*. [24] argue that social network addiction can have negative side effects. Phubbing, for example, can lead people to fall into distractions, and low concentration when trying to develop certain tasks and, as a consequence, decrease productivity, suffer or generate accidents, lose materials, and decrease efficiency. As for the sustainability of interpersonal relationships, it can negatively affect the interaction with teammates and supervisors.

The results of this research represent a relevant contribution of a social nature, since, based on a specific sample of university students, the risks and dangers involved in the use of SNs and their effects on mental health have been addressed. This is aligned with the work carried out by Gupta *et al*. [25] who pointed out that SNs can not only affect daily behavior in different social scenarios but also have an impact on academic performance and the sustained continuity of the development of family relationships. However, not everything can be considered negative concerning the use of SSRs. On the other hand, some researchers have shown the opportunities that can arise from the responsible use of SNs and the use of their potential for the promotion of mental health, such as the emergence of the metaverse, artificial intelligence, the analysis of big data present in the daily consumption of content, comments, reactions, and group membership, which can open the door to early detection of psychological problems [7], [26], [27]. However, to achieve these benefits, an effort is needed to make the audience an active participant with helpful information, generating attractive content according to the platform and target audience [28].

Regarding SNs and their impact on mental health, Braghieri *et al.* [29] obtained results that complement the findings. These researchers detected that mental health problems in university students are associated with the use of SNs, mainly since the appearance of the social network Facebook, due to the frequency of use and the way people interact; therefore, SNs have a significant influence on the development of mental disorders in adolescents and young adults. In the same context, Jabbour *et al*. [30] agree that SNs were deliberately used to misinform users, which has generated negative situations that affected the mental health of young students. An example of this was the misrepresentation of medical information on SNs and unfounded comments during the COVID-19 pandemic. This led to a negative impact on the mental health of students, as it led them to experience great fear and rejection of vaccination against the virus.

The results of this study should be considered as a point of support for future research, taking into account the limitations detected. First of all, the population responds to a certain sector of society (university students), in addition to the fact that the sampling performed only in this student sector, could generate biases in the processing and interpretation of the results. However, despite these limitations, it was possible to observe coincidences with other studies of a similar nature. Finally, studies at the population level involving more vulnerable social sectors are suggested, as well as the evaluation of the impact of the use of social media on the various dimensions of mental health, considering the different characteristics of the existing platforms on the market.

4. CONCLUSION

The results obtained were based on the calculation of Nagelkerke's Pseudo X2 for social networks. In mental health and dimensions, as well as the Wald scores, it stands out that the use of SNs shows a high propensity to generate negative effects on the mental health of students. This is associated with the distraction generated by their access, the comparison with the lifestyle and appearances shown in the feeds, which leads them to establish negative relationships with other people.

Similarly, it can lead people to face doubts and insecurities related to their belonging and acceptance in social groups or communities. This drives them to seek means of adaptation and acceptance, in many cases undue, as well as the adoption of stereotypical behaviors, as well as models or fashions related to trends within social sectors. In this aspect, because the use of SNs significantly influences mental health, it may be useful to seek the support of a professional who can help not only to establish time limits for the use of this tool, but also for the student to be aware of how he or she feels while using it and, in turn, take regular breaks to disconnect and focus on offline activities.

Concerning the value determined from Nagelkerke's Pseudo X2, regarding the impact of SNs on mental health, the variables included in the model employed have a considerable effect on the results, explaining more than half of the variability observed. However, it also highlights the need to consider other additional factors to fully understand their influence on mental health. Finally, consciously interacting on social media can help college students maintain contact with friends and family, especially those who are far away. This leads to the reduction of feelings of isolation and loneliness; however, the excessive use of networks can lead to practices such as sexting or cyberbullying, which highlights the potential risks to the mental health of students and, therefore, to the normal development of their professional training.

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